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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/615,389	07/09/2003	Motoki Kakui	50212-514	8492

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EXAMINER

DIACOU, ARI M

ART UNIT PAPER NUMBER

3663

DATE MAILED: 02/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/615,389	Applicant(s) KAKUI ET AL.	
	Examiner Ari M. Diacou	Art Unit 3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-79 is/are pending in the application.
- 4a) Of the above claim(s) 13-27, 35-38, 40 and 42-44 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-12, 28-34, 39, 41, 45-79 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

All responses listed below are regarding pages 23-29 of the remarks filed 1-3-2006 with the USPTO.

1. On page 23, regarding the elected claims, the applicant's assertion of the elected claims is correct. Examiner regrets any confusion caused. Claims 2-12, 28-34, 39, 41, and 45-79 are pending, claim 1 is cancelled and 13-27, 35-38, 40 and 42-44 are withdrawn.
2. Regarding the next three arguments on pages 23-25, the examiner finds them convincing and withdraws the rejection under 35 U.S.C. 112 first paragraph.
3. The argument on page 26 regarding the word "type" is moot in light of the amendment, which overcomes the 35 U.S.C. 112 second paragraph rejection.
4. The argument on pages 26-28 regarding the novelty of the claimed invention is moot in light of the amendment, which overcomes the 35 U.S.C. 102 rejection.
5. Regarding the comments pertaining to the new claims, the examiner concurs that the new claims substantially correspond to claims 2 and 28-33.

Claim Rejections - 35 USC § 112

6. The following is a quotation of paragraphs one through four of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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A claim may be written in independent or, if the nature of the case admits, in dependent or multiple dependent form.

Subject to the following paragraph, a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.

7. Claims 39 and 41 are rejected under 35 U.S.C. 112, fourth paragraph, as being dependent on a canceled base claim. 35 U.S.C. 112, fourth paragraph requires that a dependent claim include all the limitations of the base claim and be further limiting—claims 39 and 41 do neither, and are therefore rejected.

8. Claims 2-12, 28-34, 39, 41, and 45-79 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

As amended the applicant claims "for collectively amplifying singla light having multiplexed a plurality of channels in a single **wavelength band** including a wavelength region having a wavelength of 1610 nm **or longer**" This is an open ended numerical range that is inclusive of $f=0$, which is mathematically undefined. Aware of this physical impossibility, the examiner understands this limitation to be inclusive of IR, microwave and radio radiation. See MPEP § 2164.01.

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The applicant does not disclose how or in what manner the amplifiers of claims 2-79, are able to amplify signals at 1611 nm as well as those belonging to the following classifications:

- Microwave Radiation
- Radio waves

9. Claims 8 and 10 are similarly rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.

As amended the applicant claims "wherein the bandwidth **exceeds** 50 nm." This is an open ended numerical range that is inclusive of $f=\infty$ and $f=0$, both of which are mathematically undefined. Since this is a bandwidth of light centered about a frequency, the claim is therefore interpreted as reading on an amplifier which uses a population inversion to amplify a signal of any frequency in the electromagnetic spectrum. See MPEP § 2164.01.

The applicant does not disclose how or in what manner the amplifiers of claims 8 or 10 are able to amplify signals belonging to the following classifications:

- Gamma rays
- X-rays
- Ultraviolet radiation
- Radiation with a wavelength between 380 nm and 740 nm
- Microwave Radiation
- Radio waves

10. Claims 2-10, 28-34, and 45-65 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for an amplifier with a gain non-uniformity of 18%*, does not reasonably provide enablement for a gain non-uniformity of 0%*. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. Reducing the gain non-uniformity is one of the principle concerns in the optical amplifier art. The inventions of tomorrow which overcome the inevitable shortcomings of the inventions of today cannot be construed to infringe on the prior art simply because they fall on the desirable side of an open-ended figure-of-merit range.

* It is noted here that when the applicant (as well as others skilled in the art) measure percent non-uniformity, they intend to measure ΔG on a logarithmic (that is in dBm) not linear (a unitless ratio) scale.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ari M. Diacou whose telephone number is (571) 272-5591. The examiner can normally be reached on Monday - Friday, 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AMD 1/31/2006


JACK KEITH
SUPERVISORY PATENT EXAMINER